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NOTES UPON TREE DISEASES IN THE EASTERN STATES[1]

PERLEY SPAULDING

THE CHESTNUT BLIGHT

Some attention has been given to the chestnut blight for the past three years. It was found in July, 1909, at Middlebury, Conn., for the first time, and in September, 1909, at Bantam, Conn. Also in September, 1910, at Amherst and Springfield, Mass., and in October, 1910, at Windsor, Conn. The writer has spent most of the month of October each year in the lower Connecticut valley and the adjoining territory; much time has been spent there during the past few years besides in October. The disease was found at Windsor, Conn., the second season it was there. At any rate, it was very scattering in the Connecticut valley in the fall of 1909. A trip was made in July, 1911, as far north as Hartford, Conn., and the disease was everywhere in evidence in the Connecticut valley. There can be no doubt that in the three years, 1909 to 1911 inclusive, the disease has spread so seriously as to now be beyond hopes of control in the lower Connecticut valley.

Considerable time this season was devoted to finding out the real situation of the chestnut blight in the state of Maryland. It was found to be much more serious than at first supposed. The northeastern corner of the state cut off by a line running from the northern edge of Baltimore, east to the Delaware line, and another a little westward and then northwestward to the Pennsylvania line is already too badly diseased for eradication to be successfully carried out. Outside this area the disease is very scattering and might with relatively small effort and expense be eradicated. The course of the disease in the Connecticut valley indicates that this must be done at once or not at all. There can be no doubt that the disease is intimately connected with the distribution of chestnut nursery stock. Repeatedly, on finding badly diseased areas, the writer either found Japanese chestnut trees or was told that chestnut stock of some sort had been brought into that vicinity some years before. The disease has been at Parkton for at least six years and probably has been there one or two years longer. The peculiar appearance of chestnut trees affected by this disease is essentially due to the girdling action of the fungus. The following instance shows this very plainly: while scouting for the disease a tree was seen which had every appearance of having been killed down to the base by the blight. It had abundant suckers around the base, the dead leaves hung on the branches; in short, the tree had every symptom of the disease except the fruiting bodies of the fungus! Upon penetrating the thicket of suckers it was found that the tree had been girdled with an axe a few months before.

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[1] Paper presented before the American Phytopathological Society at the meeting of December, 1911.

LOPHODERMIUM NERVISEQUUM (D. C.) Fr.

A serious needle disease of balsam fir (*Abies balsamea* (Linn.) Mill.) has been under observation for the past five years in the Adirondack Mountains. This has been found to be caused by *Lophodermium nervisequum.* It attacks needles of all ages and occurs on trees of all sizes, but is more prevalent on the lower shaded branches or on young reproduction which is heavily overshadowed by larger trees. The disease is serious on small trees as it causes complete or nearly complete defoliation in many cases and kills the trees. The course of the disease on young leaves is fairly plain: infection begins about June first, soon after the new shoots and leaves are formed, and apparently may continue at almost any time after this date when weather conditions are favorable. The affected needles turn yellow soon, some appearing in July on the shoots of the same year. Toward fall they become more numerous and turn brown by the beginning of winter. The next April on the resumption of warm weather, a dark line shows along the middle of the leaf on the lower side; this becomes more and more prominent until about June first, when the warm rains bring about the rupture of the leaf epidermis. Along the entire length of the leaf there now appears an open trough-like rupture with the epidermis rolled back on either side. It is probable that the period from infection to formation of mature fruiting bodies, in the majority of cases, is approximately one year, varying somewhat with weather conditions: there are apparently many cases in which this period is nearly two years and possibly even more. This disease is very prevalent in the Adirondack region and apparently occurs thoughout the range of the balsam fir. It has not yet been found in nurseries, since its host is not much grown therein.

PERIDERMIUM FRUCTIGENUM Arthur

Spores of *Peridermium fructigenum* from cones of *Tsuga canadensis* (L.) Carr., which had been collected in Connecticut two days before, were used to inoculate leaves of the following species of *Rhododendron* and *Kalmia*. *Rhododendron arborescens* (Pursh.) Torrey, *R. viscosum* (L.) Torrey, *R. nudiflorum* (L.) Torrey, *R. canescens* (Michx.) G. Don., *R. calendulaceum* (Michx.) Torrey, *R. canadense* (L.) B.S.P., *R. maximum* L., *R. catawbiense* Michx., *Kalmia latifolia* L., and *K. angustifolia* L. The inoculated plants were in a greenhouse at Washington and had their leaves further developed than would have been the case out of doors in Connecticut. This may have had an effect upon the results secured. In no case did infection occur, although the inoculations were made with and without wounds upon each species.

LIGHTNING

While engaged in reconnaisance for the chestnut blight in Maryland, the past season, the writer time and time again examined chestnut trees which at a distance apparently were affected by blight, but which were killed, either completely or partially by lightning. Occasionally groups of trees standing close together were partially killed about some central tree which usually was entirely dead. More often only single trees were struck. The frequency of occurrence of such cases soon became very noticeable, especially the latter part of the summer. There must have been an average of three or four trees per square mile which were killed or badly crippled by lightning in a single season in the territory examined by the writer.

MYXOSPORIUM ACERINUM Peck

Practically the entire season of 1911 the office of Investigations in Forest Pathology has received specimens of various species of maple which were apparently killed by *Myxosporium acerinum.* The writer found it in various parts of Vermont upon sugar maple. It is especially noticeable upon street and park trees. It starts upon small branches the size of one's finger but works back until larger ones are affected. Soon it gives the affected tree a ragged appearance and becomes noticed. All the cases seen seemed to have been entirely of the present season's standing. The only feasible method of combating this disease seems to be that of pruning out the affected parts and burning them.

PHOMA PICIENA Peck

A new disease of Norway spruce (*Picea excelsa*) has for several years been attracting the attention of pathologists. The writer's attention was called to it by the superintendent of New York State Forests in 1909, but no specimens were seen. Selby has also mentioned a disease which is probably the same one. Peck in his last report named the fungus *Phoma piciena* which occurred on leaves of red spruce (*Picea rubra*) in the Adirondacks. This summer several specimens of diseased Norway spruce were sent into the office and secured by the writer from the vicinity of Baltimore and Washington. These bore abundant fruiting bodies of a fungus which came nearer to Peck's new species than to any other. Inoculations are being made in the greenhouse. The disease is quite destructive, often completely defoliating large trees and causing their death. Apparently the only practical treatment is that of burning the fallen needles and spraying with suitable fungicides to prevent further spread of the disease.

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